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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/047,339	01/15/2002	Kirk William Baldwin	Baldwin5-7-29-12-2-1-36-3	7068

7590

04/23/2003

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EXAMINER

STAHL, MICHAEL J

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/047,339

Applicant(s)

BALDWIN ET AL.

Examiner

Mike Stahl

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9 and 10 is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 6-8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ 6) ☐ Other: \_\_\_\_.

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***Claim Rejections - 35 USC § 102 / 103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Chamberlain et al. (US 6411746).

Chamberlain discloses a thermally tunable optical fiber device (fig. 4) comprising a length of fiber **12** including the thermally tunable device, and a microcapillary heater circumferentially surrounding the device, the heater including a microcapillary tube **32** and an electrically resistive heater **18** formed thereon (col. 4 line 55 – col. 5 line 12). The reference does not expressly disclose the outer diameter of the microcapillary tube **32**. The closest indications in this regard are that the diameter of the bore **62** is 2 to 4 times that of the fiber **12**, i.e., between about 250 and 500 microns assuming the fiber is a conventional fiber having a diameter of about 125 microns, and that the microcapillary tube may be “thin walled”. In view of these teachings, the examiner believes that it is reasonable to assert that the outer diameter of the microcapillary tube in Chamberlain is less than about 2 mm (2000 microns) as required by claim 1.

In the event applicant disagrees that the outer diameter of the microcapillary tube in Chamberlain is less than 2 mm, the examiner notes the following. Chamberlain recognizes, as does applicant, the relative ease of forming heater films on a capillary tube instead of directly on a fiber (col. 1 line 64 – col. 2 line 2). Chamberlain is also aware that the thermal mass of the heater may be controlled by controlling the capillary wall thickness (col. 4 lines 65-66). Finally, applicant has not described any special advantage or unexpected benefit of using a 2 mm diameter capillary as opposed to one which is slightly larger (e.g. 3 or 4 mm). Therefore, even if the capillary diameter in Chamberlain does not happen to be 2 mm or less, it would have been obvious to a person having ordinary skill in the art to choose an appropriate limit on the outer

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diameter of the capillary tube in the Chamberlain device (which in turn is a limit on the wall thickness) in order to yield desirable thermal characteristics relevant to heating power requirements, response times, and so forth.

As to claims 2-4, the fiber device may be either a Bragg grating or a long period grating (col. 3 lines 57-59).

As to claim 5, the heater **18** is a resistive coating on the surface of tube **32**.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

#### ***Allowable Subject Matter***

Claims 9 and 10 are allowed. Claims 6-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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As to claim 6, Chamberlain does not disclose or suggest providing the heater as a plurality of resistive coatings which are angularly spaced apart. The multiple-coating embodiments in Chamberlain have the coatings spaced apart longitudinally but not angularly.

As to claim 7, Chamberlain discloses capillary tubes made of silica. The resistive coating is applied to the tubes. Chamberlain does not teach or suggest making the capillary tubes of metal or using the silica tubes themselves as electrically resistive heaters.

As to claim 8, Chamberlain does not describe or suggest using a capillary heater *and* a heater directly deposited on the fiber. Chamberlain discloses both types of heaters but provides no motivation to use them simultaneously.

As to claims 9 and 10, Chamberlain fails to teach or suggest the use of nested tubes surrounding a thermally tunable fiber device, wherein each nested tube has a resistive heater.

In summary, none of the references of record teaches or suggests tunable devices which meet each and every one of the limitations of claims 6-10.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6215922 and JP 10-221658 disclose capillary-type heaters for thermally tunable fiber gratings. US 6275629 represents related work by two of the present inventors, and US 5987200 discloses tunable grating devices.


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Any inquiry concerning this communication should be directed to Mike Stahl at (703) 305-1520. Official communications eligible for submission by facsimile may be faxed to (703) 308-7724 or (703) 308-7722. Inquiries of a general or clerical nature (e.g., a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at (703) 308-0956 or to the technical support staff supervisor at (703) 308-3072.

MJS

Michael J. Stahl  
Patent Examiner  
Art Unit 2874

April 18, 2003

  
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